AMERICAN MUSEUM of NATURAL HISTORY

Genetics, Genomics, Genethics

Week 3

Molecular Lab Techniques

Part 1: Isolating DNA

Rob: The molecular laboratories here, in the American Museum of Natural History, are about 5,000 square feet. They're state-of-the-art, no different from any laboratory you'd see in a university that does molecular biology. They contain all of the up-to-date modern technology that molecular biology requires.

Specimens for molecular genomic research are kept in our frozen tissue collection, which has the capacity for over a million specimens. The specimens are kept at ultra-cold temperatures using liquid nitrogen supplied by this tank, which holds 3,000 gallons.

This column of boxes holds over 2,000 specimens in small test tubes.

This specimen, a leech, is being prepared for the collection and for genetic research. Most of the specimen will go into the frozen tissue collection, and a small part of it will go for immediate genetic research.

The first step in DNA isolation is to break the cells up. A small solution of cell lysis buffer is placed onto the tissue. The tissue is then placed into a heating block, where the cells are completely broken apart.

The next step is to separate the cellular debris from the DNA. The technician places the cellular debris and DNA into a small column.

In order to separate the DNA from the cellular debris in the columns, the technician spins the columns in a micro-centrifuge for five minutes.